

Report On

The Black Hills Beetle Infestation
Colorado National Forest.

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Introductory

A heavy increase in the number of yellow pine being killed by the Black Hills beetle was noticed by Ranger Carr of the Estes Park district of the Colorado National Forest, in the late summer of 1926.

He tried to handle the situation by selling or giving away the infested timber to local operators, but soon found that the infestation was altogether too large to be handled in this way.

The conditions were then brought to the attention of Forest Supervisor Kreutzer who with Mr. Spencer of the District 2 Office and Forest Assistant Nelson made an examination of the worst areas.

As a result of this examination the Washington office was appealed to for aid and the writer was sent from the Bureau of Entomology, Forest Insect Station at Palo Alto, California to make an examination of the area in question and report on the conditions found there. A special allotment of \$250 was made to cover the expenses of the trip.

The examination was made between December 9th and 13th, 1926. On the latter date a severe storm made further field work impracticable.

All possible courtesy and assistance was extended by Mr. Thompson, Acting District Forester and by Mr. Spencer, Mr. Kreutzer, Mr. Nelson, and Mr. Carr. The last four mentioned accompanied and assisted the writer during the survey.

The survey was limited to the Estes Park ranger district because this area was known to have the heaviest infestation and because unfavorable field conditions prevented the making of a complete survey.

General Forest Conditions

The yellow pine on this forest is found in scattered, fairly open stands principally as a pure type or in mixture with Douglas fir. Most of it is found between an elevation of 7000 feet and 9500 feet in stream valleys or flats and on southerly slopes. The type is much broken by open parks and by stands of lodgepole pine and spruce on the northerly slopes and at the higher altitudes.

The timber is short and limby and even on the best sections would not average better than 3000 board feet to the acre.

Basis for Estimates

The conclusions reached in regard to infestation are based on an examination of the infested trees in sample strips totaling 10 miles in length and including an area of about 300 acres.

A number of trees were felled and chopped into to determine the primary insect, associated insects, the amount of the trunk infested and the stage of the broods.

See the attached map for the route traveled and the location of known centers of infestation.

The conclusions given were arrived at in conference with the previously mentioned forest officers who supplied the information on the area and distribution of the yellow pine, the division of ownership and the comparative importance of the infestation on areas not visited by the writer.

Conclusions

1. The primary insect responsible for the death of the yellow pine on the Colorado National Forest is the Black Hills beetle. (*Dendroctonus ponderosae*).

2. The infestation is now in an epidemic stage.

The 1926, overwintering loss shows a 500 per cent increase over the 1925 loss.

Whether or not this increase will continue cannot be determined.

The 1925 loss, trees killed in the fall of 1925, on the Estes Park district will average about 40 trees per section.

The 1926 loss, trees now containing the broods, will average about 200 trees per section for the same area.

(It should be understood that these figures are only estimates from the basis given above.)

3. Nature of loss, 1926

The loss varies in different parts of the area from a few scattered trees to as many as 600 trees in one quarter section. Most of the loss is found in scattered groups of from 5 to 30 trees. This is in contrast to the 1925 loss where more than 3 trees to a group are rarely found.

It was found that both good and poor yellow pine stands and mixed yellow pine and Douglas fir stands are affected.

4. Estimate of total number of trees now infested.

It was estimated from type maps that the total yellow pine area on the Estes Park district is 180 sections.

On the basis of 200 trees per section the loss for this area would total 36,000 trees.

Since the yellow pine stands of the Estes Park and Boulder districts are continuous the latter should be included in any control project undertaken.

The Boulder district was not examined in this survey but forest officers acquainted with both areas report the loss on this area considerably lighter than on the Estes Park district.

On the yellow pine area of about 100 sections the loss would probably amount to about 4000 trees, making the total for both districts around 40,000 trees.

5. Volume loss and Cost of Control.

The trees examined varied in diameter from 4" to 30" with the average about 10" and one log or an average scale of 40 bd. ft.

This would put the volume of the trees now infested at 1,600,000 bd. ft.

The treating cost for these trees, including supervision and locating the trees would average about 50 cents per tree.*

This would make a total cost for the project of \$20,000.

6. Cost to the Forest Service.

It is estimated that the ownership is about equally divided between the Forest Service and the private owners (plus about 20 sections on the Rocky Mountain National Park).

On this basis the cost to the Forest Service would be \$10,000.

* Note: The cost figures are based on a report by Mr. Keen on "Experimental Insect Control Work. Dry Park, Kaibab National Forest. October, 1924".

Recommendations

The writer believes it advisable to treat the trees on this area that are now infested, provided the private owners can be organized to do their share, for the following reasons:

1. The infestation is on the increase and the entire yellow pine stand of the Colorado N.F. is endangered.

The losses in the Black Hills and the more recent losses on the Kaibab plateau are examples of what the Black Hills beetle is capable of.

2. Many of the private owners have become alarmed about the situation and would be glad to co-operate with the Forest Service in a control project and would probably criticize them if no effort was made to help the situation.

3. Much of the timber threatened has a high recreational value aside from its value as a local source of lumber.

4. The area included in the Estes Park and Boulder districts is favorably situated and delimited for a control project.

The area is definitely limited on the west by the lodgepole pine and engelmann spruce types and on the east by the non-timbered plains.

On the north a fairly distinct natural boundary is found by following the ridge from Masonville to Buckhorn Mtn. and from Buckhorn Mtn. by following the edge of the yellow pine type south to Storm Mtn. and west to Dunraven Park.

On the south the limits are less definite but the country south of a line from Eldorado Springs to Nederland is sparsely timbered and much of it has been cut over or burned.

Utilization of Infested Timber

A small amount of infested timber could be given to local operators for rough lumber or firewood provided all the infested parts were burned or peeled before the emergence of any of the beetles. This would save the cost of treating such material.

As only a small percent of the trees could be used in this way it would not materially affect the cost of the project.

Co-operation with the Park Service.

About 20 square miles of the Rocky Mountain N. P. should be included in this project as the infestation is known to

extend up Black Canon Creek and Fox Creek and probably up Cabin Creek and Roaring Fork into the yellow pine areas of the Park. No large centers have been found and the infestation is undoubtedly lighter than on the areas examined during the survey. \$1500 would probably cover their costs.

Mr. A. T. Allen, assistant superintendent, expressed a willingness to co-operate in any control work undertaken.